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## Gambling as a form of risk-taking: Individual differences in personality, risk-accepting attitudes, and behavioral preferences for risk

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### ABSTRACT

Substantial evidence suggests that various forms of risk-taking co-occur within individuals. We examined whether indicators of risk-propensity, including self-reported personality traits, laboratory-based behavioral measures of risk, and self-reported attitudes toward risk in various domains were associated with general gambling involvement and problem gambling behavior in a sample of university students, using an extreme-groups design. Personality traits and attitudes toward risk were correlated with both problem gambling and general gambling involvement. Behavioral measures were positively correlated with general gambling involvement. Confirmatory factor analyses indicated that both problem gambling and general gambling involvement loaded on single factors with other measures of risk, suggesting that gambling represents one expression of a general propensity for risk-taking. Future study of the causes of gambling behavior may benefit from integration within a more general framework of risk-taking.

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### 1. Introduction

Gambling involves an element of risk, typically a high probability of loss against a smaller probability of large gain. More generally, risky endeavors are those involving variable outcomes. Gamblers engage in such endeavors, exposing money not only to negative expected outcomes, but also to uncertain or variable outcomes. Some gamblers also subject other aspects of their lives to risky outcomes, sometimes jeopardizing their jobs or families to maintain a habit with negative returns. It is unclear whether gamblers have a general affinity for risky outcomes or whether their risk-preference is specific only to the gambling domain.

#### 1.1. The generality of risk

Various forms of risky behavior, including substance use, dangerous driving, promiscuous sex, and delinquency, co-occur within individuals (reviewed in Mishra & Lalumière, 2009). Gambling may be part of this general pattern of risk-acceptance. Gambling has been associated with various forms of risky behavior (e.g., Martins, Tavares, da Silva Lobo, Galetti, & Gentil, 2004; Powell, Hardoon, Derevensky, & Gupta, 1999; reviewed in Van Brunshot, 2009),

and shares instigative factors associated with general risky behavior (reviewed in Stinchfield, 2004). If gambling is part of a broader constellation of risk-accepting behaviors, then various aspects of personality, decision-making tendencies, and attitudes associated with risky behavior should also be associated with gambling tendencies.

#### 1.2. Personality and risk-taking

Such personality traits as sensation-seeking, impulsivity, and low self-control have been associated with risky behavior in various domains (reviewed in Zuckerman, 2007). Sensation-seeking describes a preference for varied, stimulating experiences and a willingness to engage in risk-taking in order to obtain such experiences (Zuckerman, 1994). Impulsivity refers to a tendency to prefer short-term rewards, without planning or forethought, with the potential for immediate or future costs (Eysenck, Pearson, Easting, & Allsopp, 1985). Self-control, like impulsivity, is associated with a tendency to focus on temptations of the moment, ignoring long-term consequences (Marcus, 2003).

Impulsivity has been consistently associated with problem and pathological gambling (Blaszczynski, Steel, & McConaghy, 1997; Clarke, 2004; Franken, van Strien, Nijs, & Muris, 2008; Langewisch & Frisch, 1998; Myrseth, Pallesen, Molde, Johnsen, & Lorvik, 2009; Vitaro, Arseneault, & Tremblay, 1999). Sensation-seeking has been less consistently associated with gambling, with some studies

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suggesting problem gamblers exhibit higher levels of sensation-seeking (e.g., Cloninger, 1987), and others suggesting the opposite (e.g., Powell et al., 1999; reviewed in Hammelstein, 2004). The relationship of low self-control and gambling has not received much attention so far; one study found that a self-control scale differentiated problem and non-problem gamblers, with problem gamblers exhibiting lower self-control (Corless & Dickerson, 1989). Factors implicated in temporary reduction of self-control have also been associated with increases in gambling and risk-taking behavior (Baron & Dickerson, 1999; Corless & Dickerson, 1989; Freeman & Muraven, 2010).

### 1.3. Behavioral preferences for risk

Several laboratory tasks have been developed as behavioral measures of risk-taking, including the Choice Task (Mishra & Lalumière, 2010), the Balloon Analogue Risk Task (Lejuez et al., 2002), and the Variance Preference Task (Rode, Cosmides, Hell, & Tooby, 1999). In these tasks, scenarios are presented such that people's decisions reflect individual differences in risk-preference. Risk-preference as measured in laboratory settings has been associated with real-world risky behaviors, including addictive, health, and safety risk behaviors, risky sexual behaviors, substance use, and general delinquency (e.g., Lejuez, Aclin, Zvolensky, & Pedulla, 2003; Lejuez et al., 2002). These studies demonstrated that behavioral measures of risk explain additional variance in risk-taking above and beyond that accounted for by self-report personality traits such as impulsivity and sensation-seeking.

### 1.4. Attitudes toward risk

Attitudes toward risk may also play an important role in explaining gambling behavior. Risk-accepting attitudes have been correlated with such personality traits as sensation-seeking, impulsivity, and low self-control, and have been associated with self-reports of real-world risk-taking (Weber, Blais, & Betz, 2002). Instruments such as the Domain-Specific Risk Taking Scale (Weber et al., 2002) measure risk-accepting attitudes in various domains (e.g., financial, health, ethical, social, and recreational risk). Possessing risk-accepting attitudes in various domains may be associated with elevated gambling tendencies.

### 1.5. Overview

Personality traits associated with risk-acceptance, laboratory-based behavioral measures of risk, and attitudes toward risk have been correlated with various forms of real-world risky behavior. If gambling is a form of risk-taking, various measures of risk-propensity should be correlated with gambling behavior. We examined the relationship between gambling tendencies and personality traits associated with risk, behavioral measures of risk, and attitudes toward risk. We predicted that gambling tendencies would be significantly correlated with individual differences associated with non-gambling forms of risk-taking. Furthermore, we predicted that a one-factor solution should account for variance in gambling tendencies and individual differences associated with risk-taking.

## 2. Method

### 2.1. Participants

This study was comprised of two phases. In phase one, 240 participants (120 men), age 18–25 ( $M = 20.3$ ,  $SD = 1.9$ ) were recruited from undergraduate psychology classes and completed measures

of personality associated with risk-taking (sensation-seeking, impulsivity, and self-control). The same participants were used in Mishra and Lalumière (2010). Undergraduate students have been shown to exhibit relatively high levels of gambling behavior (e.g., Engwall, Hunter, & Steinberg, 2004; Winters, Bengston, Door, & Stinchfield, 1998), thus representing an appropriate population in which to investigate the relationship between gambling and risk-taking.

We conducted a principal components analysis (PCA) without rotation on measures of personality associated with risk-taking (sensation-seeking, impulsivity, and self-control). A single component, *risky personality*, explained 66.4% of the variance ( $KMO = .69$ ). All measures on this factor loaded highly (all  $>.70$ ) and positively. Scatterplots were used to examine homoscedasticity and linearity for all PCAs, with no obvious deviations observed. Rotation was not used because of high intercorrelation among the three variables, increasing the likelihood of maximal variance being extracted without rotation. Similar results were obtained using an oblique rotation.

The risky personality component was used to select participants for the second phase of the experiment. Those phase one participants scoring highest (20 males, 19 females), lowest (19 males, 23 females), and in the middle (19 males, 15 females) of the sex-specific distribution of risky personality participated in phase two of the experiment, following a within-sex extreme-groups design. Phase two participants were 58 men and 57 women (age:  $M = 20.0$ ,  $SD = 2.0$ ). Participants comprised 65 non-problem gamblers (60.2%), 27 low-risk gamblers (25.0%), 15 problem gamblers (13.9%), and one pathological gambler (.9%), as measured by the PGSI (described below).

### 2.2. Measures

#### 2.2.1. Personality

2.2.1.1. *Zuckerman's Sensation Seeking Scale (SSS-V)*. The Sensation Seeking Scale, Version 5 (Zuckerman, 1994), consists of 40 choices between pairs of antithetical statements about preferences for varied, stimulating experiences and disinhibited behavior. A total score was obtained by summing the number of high sensation-seeking choices.

2.2.1.2. *Eysenck's Impulsivity Scale (EIS)*. The EIS (Eysenck et al., 1985) consists of 19 yes/no statements about impulsive behaviors. A total score was obtained by summing the number of "yes" answers.

2.2.1.3. *Retrospective Behavioral Self-control Scale (RBS)*. The RBS (Marcus, 2003) measures behaviors across the lifespan associated with low self-control. It consists of 67 items, measuring the frequency of behaviors associated with low self-control in childhood, adolescence, and adulthood. Behaviors were rated on a scale from 1 (*never*) to 7 (*always*). A total score was obtained by summing ratings of frequency of engagement in risky behavior. Higher scores indicated lower self-control.

#### 2.2.2. Risk-attitudes

2.2.2.1. *Domain-Specific Risk Taking Scale (DOSPERT)*. The DOSPERT (Weber et al., 2002) is a self-report measure of likelihood of engagement in 60 risky behaviors in five content domains: (financial, health/safety, recreational, ethical, and social). Behaviors were rated on a scale from 1 (*extremely unlikely*) to 5 (*extremely likely*). A total score was obtained by summing all of the items.

#### 2.2.3. Behavioral measures of risk

2.2.3.1. *Choice task (CT)*. Participants made six decisions, each between two monetary options (Mishra & Lalumière, 2010). Both options had equal mean expected values, but differed in payoff

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